

Amendments to the Specification:

Please add the following new paragraphs after the heading
"Summary of the Invention":

One aspect of the present invention is a hydrogel foam prepared by introducing a gas into a monomer solution comprising at least one hydrophilic olefin monomer and a multi-olefinic crosslinking agent during polymerization of the olefin monomer. A hydrogel foam of the present invention can swell extremely fast in aqueous solution by completing swelling in less than an hour. For instance, a polyacrylic acid hydrogel foam of the invention reaches 70% of its equilibrium swelling within 30 minutes.

A hydrogel foam of the present invention also can swell to a much larger extent than a conventional hydrogel made of the same materials at the same concentration, e.g., exhibiting a swelling ratio of at least 15 within one hour of contact with an aqueous solution. A hydrogel of the present invention can absorb more than 100 times its own weight of aqueous solution.

A hydrogel foam of the present invention is formed in part from at least one hydrophilic olefin monomer. The monomer is preferably selected from lower alkyl (meth)acrylates, lower alkoxy lower alkyl (meth)acrylates, and heterocyclic

polymerizable compounds containing a carbonyl functionality adjacent to the nitrogen in the heterocyclic ring, and hydroxyl, keto, and amino derivatives thereof. Particularly preferred monomers include acrylic acid (AA), acrylamide (AM), N-vinyl pyrrolidinone (VP), 2-hydroxyethyl methacrylate (HEMA), 2-hydroxypropyl methacrylate (HPMA), 2-hydroxy ethyl acrylate, diethylene glycol monoacrylate, diethylene glycol monomethacrylate, 2-hydroxy propyl acrylate, 3-hydroxy propyl acrylate, 3-hydroxy propyl methacrylate, dipropylene glycol monomethacrylate, N-vinyl imidazolidones, N-vinyl succinimide, N-vinyl diglycolylimide, N-vinyl glutarimide, N-vinyl-3-morpholinone, N-vinyl-5-methyl-3-morpholinone, N-vinyl-2-piperidone, N-vinyl-ε-caprolactam, inorganic salts thereof, and mixtures thereof.

The olefin monomers are polymerized in the presence of a multi-olefinic crosslinking agent having at least two alkenyl groups. Typically the crosslinking agent concentration ranges from about 0.1 to about 10% by weight relative to the olefin monomer. One multi-olefinic crosslinking agent used in accordance with the present invention is N,N'-methylene-bisacrylamide (BIS). Other suitable crosslinking agents include diallyl phthalate, diallyl isophthalate, diallyl benzene, divinyl pyridine, biodegradable proteins or carbohydrate

functionalized by covalent coupling with compounds bearing pendent alkenyl groups, ethylene glycol di(meth)acrylate, 1,2-butylene dimethacrylate, 1,3-butylene dimethacrylate, 1,4-butylene dimethacrylate, propylene glycol diacrylate, propylene glycol dimethacrylate, diethylene glycol dimethacrylate, dipropylene glycol dimethacrylate, diethylene glycol diacrylate, dipropylene glycol diacrylate, tetraethylene glycol dimethacrylate, glycidyl acrylate, glycidyl crotonate, divinyl benzene, divinyl toluene, diallyl tartrate, allyl pyruvate, allyl maleate, divinyl tartrate, triallyl melamine, N,N'-methylene bisacrylamide, glycerine trimethacrylate, diallyl maleate, divinyl ether, diallyl monoethylene glycol citrate, ethylene glycol vinyl allyl citrate, allyl vinyl maleate, diallyl itaconate, ethylene glycol diester of itaconic acid, divinyl sulfone, hexahydro-1,3,5-triacryltriazine, triallyl phosphite, diallyl ester of benzene phosphonic acid, polyester of maleic anhydride with triethylene glycol, polyallyl glucose, such as triallyl glucose, polyallyl sucrose, such as pentaallyl sucrose, sucrose diacrylate, glucose dimethacrylate, pentaerythritol tetraacrylate, sorbitol dimethacrylate, diallyl aconitrate, divinyl citraconate, diallyl fumarate, and glycidyl methacrylate.

In one embodiment, a hydrogel foam of the present invention includes one or more functional particulate fillers. Appropriate fillers include materials that increase the strength of the foam or highly absorbent materials, such as activated charcoal or other carbon materials that augment absorption characteristics of the foam. Carbon particles can be added to the monomer solution in an amount of about 1% to about 10% without affecting formation of the foam.